DOCUMENT RESUME

ED 199 245 SP 017 712

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TITLE Implications of Research on the Psychology of Learning for Education Field Experiences.
PUB DATE Feb 81
NOTE 19p.: Paper presented at the Annual Meeting of the Association of Teacher Educators (Dallas, TX, February 14-18, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Educational Attitudes: Educational Objectives: *Educational Psychology: Education Majors: *Experiential Learning: Higher Education: *Individual Development: Preservice Teacher Education: *Relevance (Education): Student Attitudes: Teacher Education Curriculum: *Teaching Experience

ABSTRACT

Judging by negative feedback regularly received from preservice program graduates, teacher educators have ignored their own experiences and the literature on learning. Some educational and general theory courses are not as effective as experientially-oriented classes, yet teacher educators still depend to a disproportionate degree on a lecture oriented mode of instruction. An investigation of the literature on developmental, cognitive, applied social psychology, and brain research provide valuable empirical and theoretical support for the significance of personal experience in conceptual learning. Contextual experience, as a process including discussion, application, feedback, and modification, is important for the individual development of teachers. The major goal of teacher educators should be that preservice teachers develop a personally meaningful concept of teaching through the provision of early and frequent referent experiences. (PG)

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# Implications of Research on the Psychology of Learning for Education Field Experiences

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My thesis is uncomplicated: Teacher educators have, since time began it seems, ignored their own experience as well as the literature on learning when they do teacher education. The most basic reality of learning is that it always has its beginning in concrete, focused, personal experience. (See Bolton, Chickering, Lee, Ogden and Richards, Piaget and Volpe in the References and Bibliography section). Consequently, the complex conceptual learning about teaching that we seek to provide preservice teachers ought to begin with, and continue to provide, personal contextual experience for them. But according to what I observe in my own institution and in other settings and what I read in the journals, we still depend, to a disproportionate degree, on the verbal mode of instructing.[1]

In what way do teacher educators ignore their own experience? With depressing regularity follow-up studies of preservice program graduates find that students view many of their courses negatively, maintaining that they are not helpful to them as potential teachers, that they do not attend to concerns of the real world, etc. (See Adams & Webb, 1979). Some of the professional education courses which come in for these kinds of comments are Educational Psychology, Social Foundations of Education, general theory classes, etc. However, when these same preservice program graduates are asked about courses which contributed to their ability to teach effectively, they invariably mention student teaching and other internship-type experiences (Ryan et al. 1978).

I maintain that after several dozen years of seeing similar results, even teacher educators ought to be willing to venture a few questions about why such is the case. In other words, our personal experience--negative reactions by our students to verbally-oriented courses, positive reactions to

[1] A recent article by Elizabeth Hunter (1980) helpfully counters this state of affairs.

Paper presented at 1981 annual meeting of Association of Teacher Educators, Dallas, Texas, February 14-18.

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experientially-oriented courses--contains a key for our understanding of how to do teacher education better.

Secondly, the psychological literature on learning can enlighten us if we will make even a minimal effort to understand it. Before I share with you my findings from that literature, let me present two caveats: first, no one paper can address all possible perspectives on learning. I have chosen to examine the literature of the psychology (and social-psychology) of learning on the presumption that a logical link exists between that area and educational experiences. Representative of the perspectives not considered in this paper are school learning models, direct teaching, Academic Learning Time, socializing influences (but see Ken Zeichner's [1980] recent provocative article) and behavioristic vantage points.

My second caveat can be made clear by reference to a recent piece of research (Ryan, et al. 1978) in which Kevin Ryan refers to an "ancient and honored professional dispute," by which phrase he refers to the continuing discussion contrasting theory and practice, principles and skills. Some of you may hear me advocating an apprenticeship type of educative system for preservice teachers in this paper. I am not advocating such an approach. It is not a question of theory vs. practice, of principle-learning vs. skill-training; rather, it is a question of <u>how people learn the art or science or craft we call teaching</u>. It is not an either-or proposition, but rather a question of <u>how</u> experience is to be made educative.

With these two cautions out of the way, let us go to the literature on the psychology of learning and ask the questions, "How do people learn about teaching and how to do it?" First, let me identify four varieties of learning, after Kapfer and Woodruff, 1972:

1. Conditioned responses
2. Motor (or skill) processes
3. Verbal processes
4. Conceptual processes[2]

Conditioned responses are habit patterns, relatively incapable of meaningful improvemeent. Motor skills are neuro-muscular actions the value of which depends on some combination of speed, grace, or precision in their performance. Verbal processes are defined as learnings which focus on the memorization of language symbols. Conceptual processes are integrated cognitive activities having an affective (attitudinal) element and which imply progressive ordering of perceptual data by the person. Conceptual processes constitute the learning required for teaching.

With this framework in mind, let us consider investigations in several fields which appear to provide empirical and theoretical underpinnings to the crucial significance of personal experience in conceptual learning.

Developmental Psychology

Drawing principally on the work of Piaget, I note in this section the contribution of developmental psychologists to the significance of personal experience in the learning equation. Indicative of Piaget's insistence on the centrality of the learner's experiences in provoking learning is the following statement:

> . . . .[N]ew thoughts. . .are constructed within the individual himself, constructed internally through the process of reflexive abstraction and constructed externally through the process of experience. (Piaget 1972a, pp. 25-26)

That such "constructed" thinking is not limited to children's cognitive development is asserted by Renner, et al. (1976):

> . . . .[A]ny adult encountering a new and unusual notion will have to attempt to secure physical or interactive experience because basic cognitive structures must be built when one is learning something new. (p. 15)

Piaget (1972b) contrasts the efficacy of verbal and experiential teaching when he cites the experiment of a Geneva colleague who taught children the

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[2]Many different schemata exist to categorize kinds of human learning; the present one was chosen because it is not extreme and it is not complicated.

words associated with a certain level of mental functioning, but did not provide them the supportive experiences associated with that level. The result: "[T]here was almost no difference in their operational thinking. Words did not change their thought processes." (p. 27) Do we have any reason to think that adults (preservice teachers) who may lack the experiences necessary to the formation of adequate concepts are likely to learn from words only?

Anglin (1977, p. 16), also a developmental psychologist, cites research which, according to him, correctly details the pattern of concept formation in children: human activity → discovery of relationships for categorizing → abstraction of qualities defining the concept → attaching a name to the newly-formed concept. For the purposes of the present discussion, the key ideas are that 1) human activity initiates the sequence, and 2) the formation of the concept antedates the learning of the name for it. "Words," says Attneave (1974, p. 296), "are attached to representational structures that are more fundamental than language."

The accompanying diagram represents a simplified model of Piaget's notion of equilibration, a core element in his theory of learning. Note that the first step is some kind of learner activity, i.e., involvement with the elements of the intended learning.

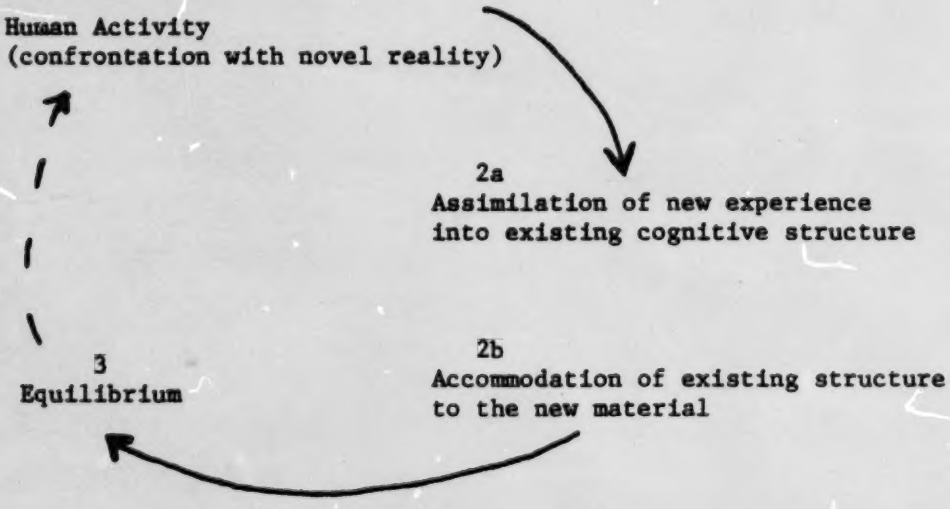



Diagram 1

Cognitive Psychology

Just a few authors will be cited of the many who have contributed to the understanding that emerges. Bolton, in a 1977 book which stresses the fundamental nature of concepts in human learning, notes that they are formed by persons through interacting with the environment. They are not gained through language.

> We develop concepts through testing them against reality and we develop a knowledge of the world through the elaboration of concepts and conceptual systems. (p. 5)

At another point (p. 21) he asserts, "Concepts are the expression of the ways in which experience has become organized." A major point made by Bolton is that the individual is never simply a passive receiver of stimuli from "outside"; rather he is an "intending" seeker, an organizer and a constructor who, through his encounters with things, events, and people, builds his understanding of the world. For our purposes, the point is that an individual's purely linguistic identification of some part of reality would not qualify, for Bolton, as a meaningful concept. It would lack the very element--experience--that gives it human value.

For Bolton, living experience is the anvil on which one hammers out one's development and learning, i.e., develops concepts. If the metaphor holds, we can say that just as an attempt to forge metal without the resistance of the anvil, to hammer it in the air, so to speak, is a useless effort, so it is with the education of teachers (following Bolton's implications): instructing teachers-to-be without providing early and intensive field experience will likely result in relatively formless or imprecise concepts of teaching.

Suggesting that the behavioral change process is the key to deriving educative principles, Woodruff has elaborated a systematic model of teaching and learning that has direct and explicit meaning for teacher educators (Woodruff 1964, 1967, 1973; Kapfer and Woodruff 1972). The process by which human behavior changes is described by Woodruff as follows (1973, p. 238):

> Behavior operates on a cybernetic loop which connects the person and his environment in a continuous input, storage and processing, output, feedback cycle. This cycle is only complete. . . when a person is directly engaged with his environment and subject to the direct consequences of his behavior. . . . Learned behavior in any situation is behavior that is practiced in the circumstances of that situation. (emphasis added)

Experimental evidence supporting this man-environment interaction view of learning is provided in Smith and Smith (1966) and in Woodruff (1964, 1967).

At this point it may be helpful to refer again to the "apprenticeship" argument. That view (sometimes taken approvingly, sometimes disparagingly) considers concrete, personal experience as a form of practice, typically following the verbal learning of some rule or principle. What has been abstracted to this point, however, from developmental and cognitive psychologists, points to personal experience as a necessary but not sufficient part of conceptual learning. It is not that real-world, in-school (for example) experiences are useful because they allow preservice teachers to practice what they have "learned," rather it is that such experiences are required for human beings to be able to learn conceptually. Human activity--focused human activity--begins all important learning.

Focused human activity I call "contextual experience." It is, referring to the Woodruff passage just cited, ". . .behavior that is practiced in the circumstances of [a particular] situation." That is, contextual experience is experience called for instructionally in order to enable the learner to form productive concepts of the material to be learned. Contextual experience is that perceptual or referential activity provided to or previously acquired by the learner which bears directly on the intended learning outcome. It is to be distinguished from language-oriented experience, which Olson and Bruner (1974) refer to as the principal means "for teaching and learning out of context. . . ." (p. 131) (emphasis added). About perceptual or referential activity--contextual experience--Woodruff (1967, p. 60) has written the following:

> It would be trivial to emphasize the role of perception. . .if perception were not seriously disregarded at almost all levels of teaching.

> Verbal input can lead to concept maturation only when the essential bits of perceptual meaning are present. When they are not present, referential input is necessary regardless of school level.

Referential input--perceptions, sensory intake, experience--cannot be substituted for by communication input--verbal symbols, language. Not simply because students need the practice (although they do), but because meaning is not acquired or is distorted in the absence of referential input.

I will say it once more: referential input alone, unconnected to reflective thinking, to elaboration of the experiential meaning, is not sufficient to enable learners to form productive concepts. But referential input is the beginning of such productive concept formation. And nothing can substitute for it. Diagram number 2 illustrates the principles mentioned in this section.

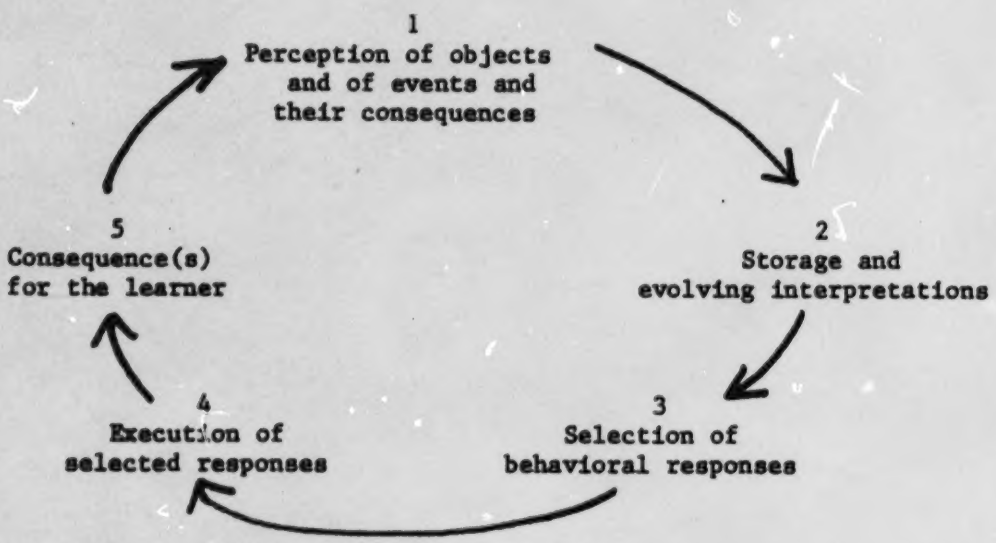



Diagram 2
(after Woodruff 1967, 1973; Kapfer and Woodruff 1972)

Applied Social Psychology

This is the field that has given us the training paradigm, the notion that in order to learn complex social concepts one must have experience with settings (real or simulated) which approximate the settings in which the learning is to function. In other words, what I am denominating "contextual experience." This is so because the learner changes as a total organism, not just cognitively, for example. Complex learning implies feelings as well as cognitions. Talking at people will not achieve the full learning purpose; experiential activity plus feedback, likely will. One writer, after observing that "experience-based learning is the most effective way to change attitudes and behavior," says that for such learning to take place,

> . . .the learner must be active, he must relate himself to his environment, and he must be involved with others and feed it back into the system. (Golden 1972, p. 8)

Diagram number 3 depicts the pattern of learning from the point of view of applied social psychology.

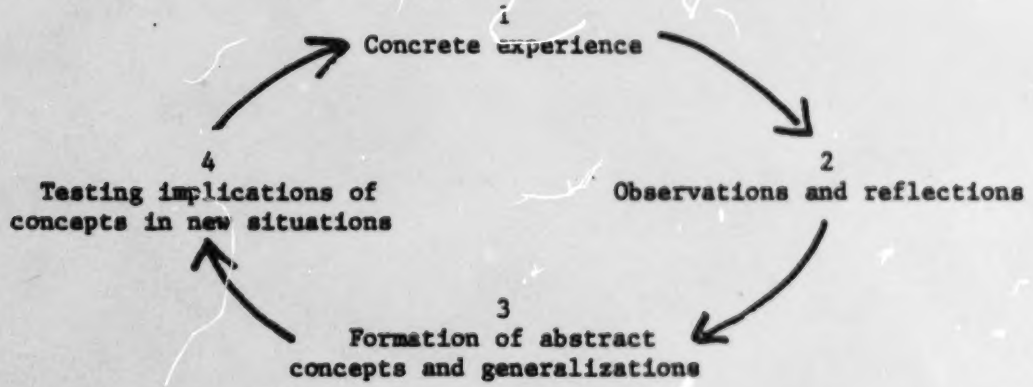



Diagram 3

Research on Learning and the Brain

Examining recent cognitive learning research and comparing it to more traditional S-R experimentation, Wittrock (1978) notes that the studies lead to a new role for the learner: "The learner is. . .given a new, more important active role and responsibility in learning from instruction and teaching" (p. 101). Beatty (1977) in a paper entitled, "Activation and

Attention in the Human Brain," claims there has been a major shift in the role of the learner as elaborated by psycho-neurological learning research in recent years. The change is from a static, input-output model of learning to a model featuring interactive, mediating, generative processes. This general finding is echoed by Wittrock (1977) in the same volume in which Beatty's paper appears, where he writes of researchers being led to "hypothesize internal cognitive processing devices. . . ." (p. 169). The idea is that the individual does not confront the instructional setting as a Lockean tabula rasa, but rather as an operator on the environment. If he does not operate on it he cannot give personal meaning to the situation.

Olson and Bruner, in an interesting theoretical paper referred to above, note that schools (one can add teacher education schools) "have settled upon learning out of context through media which are primarily symbolic." (1974, p. 125, emphasis added) Objecting to this pervasive symbol-oriented approach, the authors remark that,

> Living systems have an integrity of their own, they have commerce with the environment on their own terms, selecting from the environment and building representations of this environment as required. . . . (p. 128)

Further,

> . . .objects and events are not passively recorded or copied, but, rather, acted upon and perceived in terms of action performed. (p. 128)

Thus, Olson and Bruner build a case for learning that makes human experience/activity central to the process. "We have a picture of reality that is biased by or coded in terms of our actions upon it; knowledge is always mediated or specified through some form of human activity." (p. 128-9) This "picture of reality" eventually has language attached to it. From the discipline of social anthropology comes the idea that there is a synergy between the culture and the individual (Lee, 1967). The individual's learning is to begin with pure, unfiltered experience of the world, but the culure is to provide the linguistic handles for organizing and transmitting the resulting concepts.

Coleman (1976) has distinguished two kinds of learning processes: one he calls "information-processing," the other, "experiential learning."

He opines that perhaps schools have entertained the former more congenially than the latter and that such a case may not have been beneficial for learners. I believe we have done similarly in teacher education, with the same effect.

The accompanying diagram (after Coleman), represents generally the theory and research presented in this part of the paper.

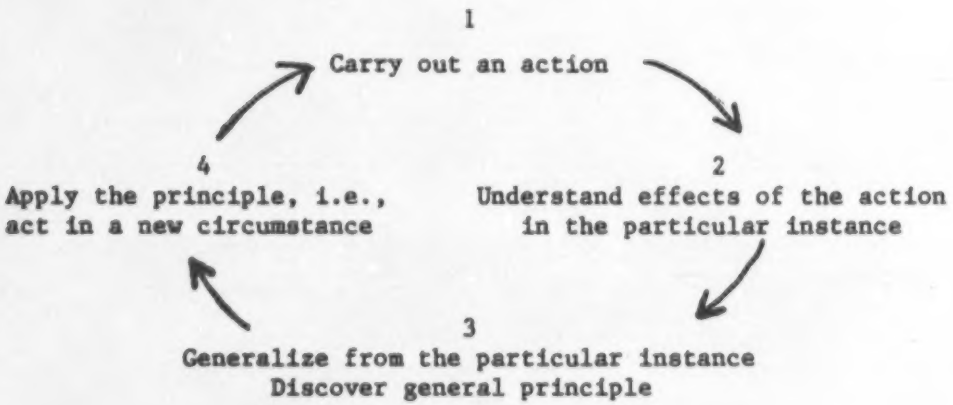



Diagram 4

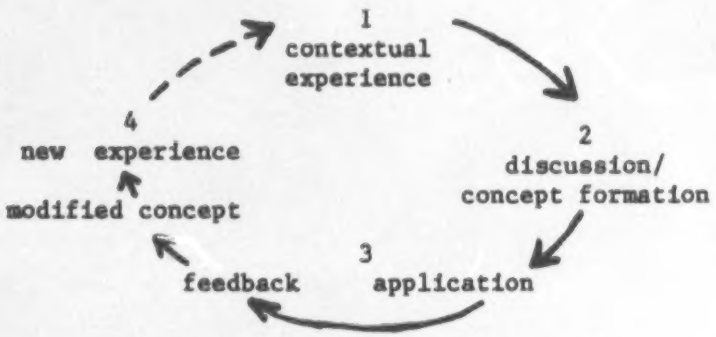
Drawing an analogy between a good chef and a good teacher, Petrie (1974) says the good chef is never a pedestrian recipe-follower, but rather one who has tried the recipe, tested the results, modified the recipe on succeeding efforts, and so on. So, too, the productive teacher is the one whose perceptions are plenteous and rich and are congruent with verbal descriptions of teaching. One's perceptual categories result from contextual experience. Generally the more contextual experience (with appropriate reflection and generalizing) one has, the more adequate are one's perceptual categories. "A good deal of practice seems to be required to enable the student to perceive the field [adequately]." (Petrie, 1974, p. 55). "[U]ntil the student develops perceptual categories which go beyond more recipes, he will not become a real teacher" (p. 59).

## Summary

Four points seem to stand out from the experimental findings and the theoretical discussions I have summarized.

1. The pattern descriptive of the learning process emerging from recent psychological (and other) investigations into the phenomena of human learning is one which centers on the significance of the learner and his or her concerns.

2. For instances of complex conceptual learning (the kind of learning teacher educators seek for teachers-to-be), this pattern contrasts verbal or symbolic input to the learner, with experience in the learning context by the learner. The contrast reveals that verbal teaching alone or verbal teaching prior to learner experience with the referents of the conceptual learning sought, will be less productive than teaching in accordance with the cyclical pattern illustrated below:




"If a symbol is to stand for something, it must stand on something--a firm foundation of relevant experience." (Dale, 1969, p. 109).

3. In the absence of appropriate sensory input the human organism fails to acquire some stabilizing order, some structure (conceivably neurological) which allows it to generalize and to make all data--sensory and verbal--relevant to its intentions in the learning situation. This need for contact with the referent in the process of concept formation is not restricted to young children. We accept the statement of Ruchlis and Sharefkin (1975, p. 133): ". . .[T]he base of most learning is sensory experience." Undoubtedly the increasing independence from the necessity

of referential input we experience with increasing age is due to our building up of a reservoir, as it were, of concepts founded upon direct, personal experience. This stored, cumulative conceptual knowledge allows us to comprehend and manipulate meaningfully the verbal symbols associated with the concepts learned.

4. Experience alone, unconnected to further effortful processing by the learner, is not necessarily an educative force. The element of learner cognitive effort is a necessary--although not sufficient--part of the learning process. After the perceptual categories are developed through experience, the mental operations of generalizing, relating, abstracting--concept formation, in other words--occur. The result is an internal representation of some reality, which is then tested through instrumental behavior with resulting feedback, and so on.

These four points inevitably must be seen to have substantial implications for teacher education. In the final portion I will elucidate some of those most important, in my opinion.

## IMPLICATIONS FOR THE PRACTICE OF TEACHER EDUCATION

The consumers of education have a right, in my view, to expect teachers to be educated through the most relevant and productive means available. Teacher educators generally have not fulfilled that expectation in their preparing of teachers-to-be. Time and time again we hear our own students (or read about others' students) lamenting the discrepancy between the real world of teaching and the verbal world of their preservice training.[4] The criticism usually is not a blanket condemnation of teacher education, but rather a plea--often poignant, sometimes hostile--for us to "get our act together" so that new teachers will not have to spend their first year in shock. (see Ryan, et al. 1978)

I believe no more sure guide to a substantial part of teacher education exists than the findings presented above. I take it that the major outcome we seek for students in education is that they develop a concept of teaching--tentative and relatively simple, perhaps, initially, but a personally

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[4]See Adams and Webb, "A Large-Scale Evaluation of Preservice Teacher Education Programs" ERIC Document #SP012637, Sept. 1978.

meaningful concept, nevertheless. The building of such a concept (which includes attitude, knowledge and skills) of teaching is facilitated by early and frequent contact with classrooms, pupils, administrators, professional teachers and parents--the real environment of education. Even considering the current burgeoning practice of exploratory and other field experiences, we teacher educators have only begun to bring to bear the power of this instructional tool in teacher preparation. For example, as far as learning theory is concerned, there is reason to consider configuring practice teaching much earlier in the preservice program. Notice that I did not say as far as politics, public relations, or governance, is concerned!

At this point I mention again that I have not attended to, except in the most superficial way, the crucially important question of <u>how</u> one's experiences are to be integrated into one's conceptual understanding. You have been shown various graphic illustrations of the presumed "learning cycle," but it must be recognized that the steps depicted in them have not been elaborated on beyond the idea of the relation between input and cognition.

Finally, of course,what happens to the learner as he or she moves through (or fails to move through) the learning sequence <u>beyond</u> the initial contextual experience is determinative of the nature of the concepts he or she will form. Nevertheless, I have taken as my task only the reporting of data and theory-like statements from several investigations of the phenomenon of learning which demonstrate--unmistakeably, in my opinion--that human learning to be productive must <u>begin</u> with relevant perceptual (sensory) input, that is, with contextual experience. The fact that the succeeding steps have not been explained in this paper should not be allowed to reduce the impact of what <u>has</u> been shown.

Some may quail, as I mentioned at the beginning, before the implication of the essentialness of heavy referential learning for preservice teachers, fearing perhaps that such an approach would lead to a simple apprenticeship model of teacher education. Of course it is possible, if people choose it, that such a model may emerge; however, it is not implicit in the approach to learning presented. In fact, the experience to be gained at the beginning of (and continuing through) the teacher education sequence is a <u>necessary preliminary</u> to concept formation and, hence, skilled teaching; it is not an end in itself. In Petrie's (1974) words, we are to help preservice teachers master the requisite "perceptual categories" so that the necessary personal and individual conceptual work can be accomplished productively. The approach

I am insisting upon is not imitative, but generative.

To conclude, we should be about the business of helping preservice (and inservice, for that matter) teachers to construct personally meaningful concepts of teaching through the provision of referent experiences early and frequently in their pre-professional or professional learning.

Those sometimes poignant and sometimes hostile student pleas that I mentioned in the beginning are really pleas for relevance in teacher education programs; pleas that we teach them the way the creator built them to learn.

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